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TVA-1000B FID and DataManager: Detect and Analyze Hazardous Emissions

- Chemical plants
- Detect/analyze leaks
- Environmental hazards

Application

The Environmental Protection Agency, as well as state environmental regulatory commissions, mandate that chemical plants measure and analyze their facilities' emissions at regular intervals (typically, quarterly). The intent of the regulations is to ensure that emission of combustible organic compounds (e.g., ethylene, benzene) into the atmosphere does not exceed the legal leak rate. These emissions could cause damage to the earth's ozone layer. A plant must repair the source of such leaks or face a possible fine.

Monitoring and measuring chemical plant leaks calls for sophisticated, high-tech equipment. Plants either measure the leaks themselves or hire an outside contractor to do the testing. Emissions are measured at all potential leak sources within the facility. These are called "tag points" because each potential source is marked with a tag or identifier. The technician makes his or her rounds, measuring leakage and recording data from each of these points. The technician can use either a photo ionization detector (PID) or a flame ionization detector (FID) to do the job.

With the former, the light source ionizes a compound and when it emits free ions, the PID will measure them in the detector's chamber, producing data on concentration levels. More sensitive than a PID, an FID uses a flame source instead of a light source. The FID detects virtually all the compounds in a sample that are potential problems for a chemical plant. That is why an FID is the instrument of choice of almost 100 percent of chemical facilities. (Operators of pharmaceutical plants, for example, might want to purchase a PID-FID combination instrument. The value of this detector is its ability to detect virtually the entire gamut of volatile compounds – organic and inorganic – or specifically those types of compounds found in a pharmaceutical facility.)

Energy Facilities Services Inc. (EFSI), located in Houston, Texas, is a contractor to several chemical plants in the region, providing monitoring and data analysis services on plant emissions. EFSI has periodically purchased Thermo TVA FDI detectors in the past and has seen the marked advantages of the Thermo instruments vis-à-vis the competition. Rather than buying two or three detectors at a time, as had been their practice, EFSI was now looking to buy 20 new analyzers, as well as 20 companion data managers, virtually all at once. Such a large purchase order raised financial concerns for the company and tough questions on whether it would be able to complete the transaction.

Thermo Solution

Because EFSI was reasonably concerned about such a big capital outlay, Thermo initiated a discussion about the option of their leasing the equipment instead of purchasing it. According to Thermo, leasing would address EFSI's cash flow concerns while making it possible to eventually purchase the equipment under very favorable financial terms. EFSI leased the 20 analyzers and 20 data managers under a 4-year agreement with the option to purchase the equipment at the end of the four years in a one-dollar buy-out. Thermo's solution was a win-win for both parties.

Key Specifications

The TVA-1000B FID is an over-the-shoulder portable vapor analyzer offering flame ionization detection. The instrument features on-board data logging and multi-point calibration as well as multiple calibration curves. The TVA-1000B FID increases productivity and efficiency and over a broader range. Overall monitoring time is

reduced because the number of vapors detected per scan with the unit is greater and scribing time is eliminated. Simple to use, the TVA-1000B FID has a menu-driven operation and easy-to-read LCD displays with a large keypad. The unit is intrinsically safe for Class I, Division 1, Groups A,B,C, and D conditions. Thermo's TVA comes with an optional enhanced probe with a 16x20 character readout and a flame-re-ignite and routing functions. Designed for field conditions, the detector has an 8-hour portable operation time.

The TVA-1000B DataManager is a handheld keyboard and display unit that interfaces with the TVA-1000B FID to provide an orderly and concise method of monitoring and tracking fugitive emissions within a facility. With the DataManager, an operator can modify data in the field, eliminating the need for manual recording of data. (This helps ensure compliance

with the electronic data storage requirements within most consent decrees.) Operators can also easily search and navigate between tags in a route by simply entering the desired tag identifier. In addition, operators can control how data is viewed and accessed by customizing data fields and display screens to meet the needs of different facilities.

Service, Support & Warranty

The TVA-1000B FID comes with a one-year warranty.